Space Weather Forecast

Issued on Friday, 22 April 2022 at 13:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance Strong flares (R3 Radio Blackouts), with further Moderate flares (R1/R2 Radio Blackouts) likely.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Moderate, with one Moderate flare observed, from the more northern of two complex regions in the north centre disc. This region, along with the region to the south, have been responsible for a number of Common-class flares through the last 24 hours. There are three remaining regions on the disc, with all these appearing to be relatively inactive. No new Earth-directed CMEs (coronal mass ejections) have been observed over the last 24 hours on available imagery.

Solar Wind / Geomagnetic Activity: The solar wind speed has been slightly elevated through the last 24 hours. Total magnetic field strength started moderate, but weakened through the period. The north-south component of the magnetic field has varied weakly. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to be mainly Moderate over the next four days, with a slight chance of High activity, mainly from two complex sunspot regions on the north-centre disc.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on 21st April may glance the Earth on 24th April, but this is low confidence. Solar winds are slightly elevated due to a fast wind, but this is likely to decline through day 2 (23rd April). A further fast wind may connect with the Earth on 24th April, producing slightly elevated speeds, although the timing and speed is also low confidence. Geomagnetic activity is likely to be Quiet to Unsettled through much of the period. Active intervals are possible on day 1 due to the fast wind. There is a slight risk of G1/Minor Storms on day 3 or 4 (24th or 25th) due the possible coincident arrival of the glancing CME and development of the fast wind, but both events are considered to be low confidence.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is likely to remain at background with no solar radiation storms occurring. The risk of solar radiation storms, although remaining very low, will increase as the complex sunspot regions on the Earth-facing disc move westwards through the period into a greater risk region for affecting the Earth should they produce any particle rich flares.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	70	70	70
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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